

The items in the wire breach component are also based on a doctrinal OPFOR wire obstacle. The OPFOR uses wire obstacles either to reinforce a minefield or to tie an obstacle into a terrain feature, another obstacle, or a battle position. The wire obstacle is usually a non-standard triple concertina obstacle, and a grappling hook, bolt cutters, and wire gauntlets are all that is needed to breach it.

The final components in the breach kit are the lane-marking items. Some of these assist both near and far recognition. The near recognition items include chemlights and engineer tape, and the far recognition items include BS-17 panels and chemlights in different colors. The infrared strobe light can be very effective for a unit equipped with night vision devices.

This breach kit provides only the equipment needed to breach these wire and mine obstacles. The infantry unit must still train on the tasks necessary to use the kit properly. For help in establishing the required training program, leaders might use the following references: ARTEP 5-145 Drill, Engineer Drills, October 1990, outlines the battle drill for a minefield breach with hand-

emplaced explosives. The demolition skills required to execute this battle drill are found in the Soldier's Manual for CMF 11, Skill Level 2. For help in understanding breaching theory and breaching tactics, I recommend FM 90-13-1, Combined Arms Breaching Operations. The list of inert training materials shown in Table 2 will also help in the development of a training program.

Within a battalion, this breach kit may be distributed either by standing operating procedure (SOP) or according to METT-T (mission, enemy, terrain, troops, and time). I recommend, however, that each mechanized platoon and each light infantry company have one complete kit on hand. Mechanized platoons can cross-load the equipment internally so that each squad carries a different component of the breach kit—lane marking, minefield, or wire breach.

Light infantry companies can cross-load these items among their platoons. These units can then be cross-attached within a mechanized task force or a light brigade with known breaching capabilities. A light infantry company can carry the breach kit in the combat trains with the first sergeant's vehicle

and bring it forward when needed. With light infantry units, this kit will require minor modifications. U-shaped pickets, for example, could be replaced by the shelter-half poles, the picket pounders could be left out, and smoke grenades could be used instead of smoke pots.

As infantry commanders equip and train soldiers with this breach kit, they will be better able to maintain their momentum instead of stalling at an obstacle. With this kit, mechanized infantry platoons and light infantry companies will have the equipment to breach any wire obstacle, breach one lane in a surface-laid minefield, and mark one lane. Commanders will have their own "sappers" as organic combat multipliers and reduce their requirement for scarce engineer assets.

Captain Josef R. Hallatschek is a combat engineer observer-controller at the National Training Center and has also served at the Joint Readiness Training Center. He previously served with the 1st Infantry Division (Forward) during its training at the Combat Maneuver Training Center in Europe. He is a 1982 graduate of the United States Military Academy and holds a master's degree from the University of Southern California.

Fire Support In Irregular Warfare

CAPTAIN JOSE M. MARRERO

No commander wants to risk injury or loss of life among his soldiers when fire support can neutralize or destroy the enemy as effectively and at far less cost. Fire support is not limited to such conventional scenarios as the ones used in World War II, envisioned for Europe during the Cold War era, or used so effectively in Southwest Asia in early

1991. We must therefore forget about the myths and false concepts that overlook the use of this combat multiplier in irregular warfare. The United States' operations in Grenada, the swift, decisive action in Panama, and the use of mortars in El Salvador are only a few of the many examples where fire support has been used in this type of conflict.

Before using fire support in irregular warfare, leaders must consider some special characteristics of this type of conflict:

Fire Support Coordination Measures. The terrain and the mission in irregular warfare dictate the need for more fire support coordination measures. It is generally known, for exam-

ple, that many battles and skirmishes take place in or near heavily populated areas. Because of the nature of the terrain in those areas, such measures as *no-fire areas* and *restrictive-fire areas* should receive increased attention.

Fire support officers at all levels are responsible for obtaining information about populated areas and making recommendations to their commanders. Fire support coordination measures contribute significantly to protecting both the civilian population and our own troops.

But these measures are not limited to populated areas. No-fire areas should be used anywhere friendly troops operate, and the operations overlay should be updated to reflect any changes in the situation. In the early stages of an operation, for example, when reconnaissance elements are sent to scout potential targets, no-fire areas should be away from the targets and properly designated.

Each coordination measure should be graphically illustrated so all agencies involved can understand it. For example, when a measure affects the Air Force, such as the airspace coordination area (ACA), it should be located on terrain that the pilots can identify from the air. An ACA provides a three-dimen-

sional box in the air space for the purpose of attacking a target with more than one fire support means at a time, including close air support (CAS). The only safe area for pilots is inside the ACA; surface-to-surface indirect fires should therefore go over, under, or alongside the ACA but not through it.

To prevent the cratering caused by rounds with point detonating (PD) fuzes in a helicopter landing zone, a restrictive-fire area should be established with signs indicating "PD fuzes prohibited." In air assault operations, which are often used in irregular warfare, the landing zone must be clear of craters to allow for clean landings. The time and variable time fuzes provide the best effect; that is, they yield air bursts and will clear the enemy area without leaving craters in the terrain.

Terrain. The use of fire support must be adapted to the combat terrain. Evidently, field artillery manuals are not based on this concept but are geared mostly to the possibility of large-scale military operations in Europe. One example is the size of a firing point for a field artillery battery—400 x 200 meters. An open area of this size might easily be found in Europe, or in the desert, but hardly in a jungle. Likewise, some manuals indicate that the distance

between howitzers should be about 50 meters.

The only solution is to adapt to the type of terrain. For example, if the only suitable area measures 200 x 100 meters and the grass is one-and-one-half meters high, the field artillery advance party should be sent early enough, and with the necessary equipment, to cut the grass so the guns can be emplaced rapidly when they arrive.

Terrain also affects forward observer procedures. In the desert, it is appropriate for a forward observer to place the initial rounds behind the target during a fire adjustment, because distances are greater than they seem. But the process should be different in the jungle. Because of the density of the vegetation, the smoke produced by high explosive (HE) shells is difficult to spot. Smoke rounds (HC), not white phosphorous (WP) rounds, should be used during the adjustment phase to identify the rounds' point of impact and reduce the risk to friendly troops. Finally, high explosive rounds should be fired for effect after the fire adjustment phase has been executed.

The use of WP or smoke can also support the commander's deception plan. Because mortars and field artillery are mobile weapons, they can





place smoke wherever the commander wants the enemy to believe his unit is operating.

Another point to be considered is the round and fuze combination. An HE round combined with a delay fuze can penetrate treetops and spread both missile fragments and tree fragments, showering the enemy with a double fragmentation. Likewise, PD-fuzed HE used in rocky terrain will produce a double fragmentation effect by scattering rock fragments along with fragments of the projectile itself.

Forward observers must often adjust fires on the basis of the sound of an explosion, because jungle terrain and some mountainous terrain restricts their view. An observer must therefore develop his hearing as well as his vision.

If the terrain is too dense and the forward observer needs help, he can find emplacement instructions in Field Manual 6-20-50, page L-4. The fire direction center (FDC) can fire a marker round, usually white smoke, 300 to 400 meters forward of friendly troops. With this technique, the FDC simply establishes a target, fires the white smoke round, and transmits the coordinates of the point of impact to the forward observer. Thus, the forward observer is made aware of a known point of reference.

Close air support can be particularly effective in irregular warfare because of

its precision and its destructive power. CAS is difficult to control in the jungle, however, because the pilot cannot see friendly troops through the dense vegetation. The use of smoke grenades to mark the position of friendly troops helps a great deal. In this type of terrain, the Air Force's heavy bombs (2,000 to 3,000 pounds) can clear the area and provide better observation.

The Enemy. In irregular warfare the enemy's immediate intention and direction of attack normally cannot be predicted. This creates a series of problems for the fire support element:

- Field artillery batteries and mortars need to be positioned to cover 6400 mils (360 degrees) to provide all-round indirect fire. This can also offer greater protection to the perimeter through the artillery's direct fire capability.
- Neither the artillery batteries nor the mortars should be left without an infantry defense, because they are more vulnerable to enemy attack.
- A fire base must be located within range of another base so the two can support each other by indirect fire.
- Since the enemy may be highly mobile, the coordinates of the different targets must be verified constantly until the moment of fire. Otherwise, too much ammunition can be expended, or even worse, too many friendly casualties can be caused by the artillery.

Accuracy. No matter how many fire support weapons are available, the

nature of irregular warfare requires that they be completely accurate. In this type of conflict, targets are scarce, and the terrain is either inaccessible or located in civilian areas.

To achieve this kind of accuracy with artillery or mortars, several actions are necessary, regardless of the mission. Among these are boresighting, registration, calibration, and the exact positioning of the guns.

The AC-130 Spectre aircraft deserves special mention because of its accuracy and firepower. During Operation JUST CAUSE in December 1989, the system was remarkably effective. As one of the many examples, an AC-130 located an enemy barracks at night, fired, and destroyed this one building, leaving all the surrounding structures intact.

The AC-130's efficiency should not be surprising, because it was designed for special operations. This aircraft also conducts armed reconnaissance missions, convoy escort, and perimeter defense. It is equipped with a wide variety of weapons—including the 7.62mm minigun, 20mm Vulcan, and 40mm and 105mm cannon—and the ammunition includes high explosive and white smoke rounds.

The Function. The ultimate goal of fire support is not just to destroy or kill. Its employment can include non-lethal missions, with illumination and smoke, for example. Illumination—another important capability—is not used for

the sole purpose of illuminating the battlefield but also for harassment, to focus attention on a particular area, and to orient units at night.

A smoke mission can provide obscuration, mark a target for attack by CAS, orient friendly troops, or direct attention to a specific area, giving the commander a means of deception. Smoke is also a highly mobile means of deception, because smoke rounds can be fired rapidly almost anywhere on the battlefield. Additionally, these rounds are relatively safe; a smoke shell has no fragmentation and cannot normally cause civilian casualties unless it scores a direct hit on an individual.

On the other hand, we must not for-

get the psychological effect of fire support on the enemy. The frightening noise, concussion, and flash of the explosives are some of the important features of fire support. Simply letting the enemy know that we have these means and will use them is often enough to scare him.

Finally, we must remember that during Operation JUST CAUSE, field artillery was used at Fort Amador to reduce U.S. casualties when an M102 howitzer (105mm) was used in the direct fire mode against a Panamanian Defense Force barracks, which caused the enemy to surrender.

There are many missions for fire support in irregular conflicts, and all of

them can enhance a unit's combat power. A maneuver commander must decide to use this firepower to its full capacity in order to inflict maximum casualties without sacrificing the courage, determination, and lives of his soldiers.

Captain Jose M. Marrero has served in various Field Artillery positions including battery commander, fire support team chief, and battalion fire support officer. He recently completed an assignment as an instructor in field artillery and tactics at the U.S. Army School of the Americas, Fort Benning, and is now in a graduate program at Vanderbilt University. He is a graduate of the University of Puerto Rico.

Attending Graduate School

CAPTAIN CRAIG J. CURREY

Many company-grade officers consider attending graduate school at some time during their careers. Most of them encounter unforeseen problems associated with attendance and must learn from experience.

Drawing on the experiences of several officers who have completed graduate school, I would like to offer some suggestions for any officer interested in pursuing a full-time, fully funded graduate program.

As you think about working toward an advanced degree, do not become discouraged by any preconceived notions about your academic potential. The Army offers many different programs and alternate specialties that require advanced degrees. This is a key point; the availability of Army-funded graduate schooling is driven by the Army's need for personnel with advanced degrees in specific academic disci-

plines. Certain specialties, language skills, or minority status may put you in higher demand than you realize. Your Army experience and maturity can also give you an advantage in the competitive admissions process.

Ask senior officers, branch representatives, and others in the Total Army Personnel Command (PERSCOM) about graduate school possibilities. Work with them to coordinate your release for schooling. Problems may arise in the requirements of your secondary specialty, branch needs, funding constraints, and your personal desires, and you must monitor your own progress. Start early in expressing your desires, and be persistent.

Once the idea of graduate school becomes a real option—and perhaps even earlier—the Graduate Record Examination (GRE) will be one of your first hurdles. This standardized test is

good for five years at a college admissions office. You will probably need to take it during your advanced course or your company command. It is offered only a few times a year, so find out early when and where the GRE is administered in your area. You can usually register at your post education center or at a local university.

Prepare by studying a GRE preparatory book, previous GRE tests (sold by the testing institute), or a preparatory course offered at a nearby institution. At least know the format of the test, the types of questions on it, and all the directions, so you won't have to waste time reading the same instructions during the test.

A math refresher is beneficial for most officers to review the basic algebra and geometry required to complete the test. You may receive conflicting guidance on how to prepare for the ver-